

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: Unknown)
Filing Date: Unknown)
Priority Date: 27 February 2001)
Applicants: AVISON, Ben)
For: APPARATUS FOR THE DECODING)
OF VIDEO DATA IN FIRST AND)
SECOND FORMATS)

PRELIMINARY AMENDMENT

Director For Patents
Box: New Application
Washington, D.C. 20231

Dear Sir:

This is a preliminary amendment to the enclosed application entitled "Apparatus for the Decoding of Video Data in First and Second Formats" claiming priority to British Patent Application No. 0104785.1 filed 27 February 2001.

In the Specification:

Please amend the specification as follows:

Page 1, after the title, insert the following headers and paragraph:

--CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to British Patent Application No. 0104785.1 filed 27 February 2001.

BACKGROUND OF THE INVENTION-

Page 1, line 3, change "programmes" to --programs--; lines 26 and 28 change

"programme" to --program--.

Page 2, line 2, change "programmes" to --programs--; lines 7 and 11, and change "programme" to --program--.

Page 4, before line 18, insert the Header:

--SUMMARY OF THE INVENTION--

Page 4, line 25, change "characterised" to --characterized--.

Page 5, line 24, change "synchronised" to --synchronized--; line 25, change "resynchronised" to --resynchronized--.

Page 6, before line 23 insert the following header:

--BRIEF DESCRIPTION OF THE DRAWINGS--

Page 7, before line 4, insert the following header:

--DESCRIPTION OF THE PREFERRED EMBODIMENTS--

Page 7, line 13, change "patent application" to --present disclosure--; line 22, change "quantised" to --quantized--.

Page 10, line 18, change "quantised" to --quantized--.

Page 12, after the last line, insert the following paragraph:

--While the invention has been described with a certain degree of particularity, it is manifest that many changes may be made in the details of construction and the arrangement of components without departing from the spirit and scope of this disclosure. It is understood that the invention is not limited to the embodiments set forth herein for purposes of exemplification, but is to be limited only by the scope of the attached claim or claims, including the full range of equivalency to which each element thereof is entitled.--

IN THE CLAIMS:

1. (Amended) A method for generating and processing data for the display of a stream of video data on a display screen connected to data processing apparatus, said method comprising the steps of: [apparatus]

processing [an MPEG] a motion picture expert group compliant data stream of video data selected to be viewed by a user in a first format via said apparatus;

generating an altered format for said video data;

[and] a user selecting with selection means to select to view the said video data in [an] said altered format[, said altered format generated by the apparatus and characterised in that,]; and

following the user selection of the altered format, [the method includes the step of] identifying the required level of data to be held in a buffer memory in the apparatus prior to decoding [the] a first frame of said video data for the alternative format.

2. (Amended) A method according to claim1 [characterised in that the method utilises] wherein the determined buffer memory size is used in identifying a value of the separation of the encoded frames in the video data bitstream and [uses] this value is used as a substitute for [the] various header field values of the [MPEG] motion picture expert group data stream which [are] may be unavailable.

3. (Amended) A method according to claim 1 [characterised in that] wherein the altered format is a fast cue or fast review video display.

4. (Amended) A method according to claim 1 [characterised in that] wherein the determination of the required buffer memory size is made for the largest frames of the video data known as the I frames.

5. (Amended) A method according to claim 4 [characterised in that] wherein the required buffer memory data level is set at a value to [minimise] minimize delay in the transition between the generation of video from the normal and altered video formats such that the level is set at, or substantially at, a level of sufficient size to accommodate the data for the I frame.

6. (Amended) A method according to claim 1 [characterised in that] wherein when arriving at the level of the buffer memory data reference is made to time stamp data transmitted as part of the video data.

7. (Amended) A method according to claim 6 [characterised in that the] wherein said time stamp data is carried as part of the systems layer and [the time stamp data] allows data in the other levels to be time [synchronised] synchronized by referring to and retrieving a common reference time from [the] said time stamp data.

8. (Amended) A method according to claim 6 [characterised in that the method includes] including the use of [the] said time stamp data to estimate the size of the I frame data and hence the required video buffer memory data level.

9. (Amended) A method according to claim 1 [characterised in that the] wherein said video data having been transmitted from a location remote to the apparatus is received by the apparatus[, said data having been transmitted from a location remote to the apparatus].

10. (Amended) A method according to claim 9 [characterised in that the] wherein said apparatus is a broadcast data receiver [(BDR)] connected to receive data from a broadcaster.

11. (Amended) A method of generating a video display in a first standard [MPEG] motion picture expert group format and a second user selectable fast forward or fast cue format, said method [involving] comprising the steps of[,]:

upon user selection of the fast forward or fast cue format, obtaining a value indicative of the separation of received encoded frames in [the] a video data bitstream;
[and] using [that] said value as a replacement value to indicate a required level of data to be held in a buffer memory device prior to the commencement of the decoding; and
displaying of the first frame of data for the fast forward or fast cue display.

Add new claim 12 as follows:

--12 (New) A method of generating a video display as set forth in claim 11 including the additional step of referring to time stamp data transmitted as part of said video data when arriving at said required level of data.--

REMARKS

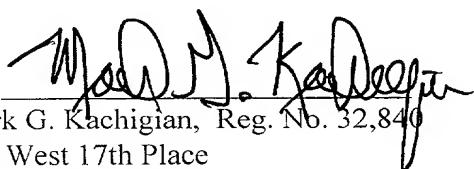
Attached is the clean version of the claims and new paragraphs as required in Section 1.121(4) (ii).

The application should now be in condition for examination, which is respectfully requested.

Respectfully Submitted

HEAD, JOHNSON & KACHIGIAN

Dated: 11 February 2002

BY: 
Mark G. Kachigian, Reg. No. 32,840
228 West 17th Place
Tulsa, Oklahoma 74119
(918) 584-4187
Attorneys for Applicant

New Header to be Inserted on Page 1, before line 1:

--CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to British Patent Application No. 0104785.1 filed 27 February 2001.

BACKGROUND OF THE INVENTION

Replacement Paragraphs to be Inserted Into Page 1:

The invention which is the subject of this application is related to the provision of broadcast data, from which television programs and other services, such as home shopping, games, internet services and the like can be generated, and particularly to the provision of streams of data which are referred to as "trick mode" streams of data.

In addition to the generation of video and audio there are an increasing number of different forms of user selectable services which can be selected via the BDR. One known service is Video on Demand (VOD). In this service the BDR user can select to view a program or film at that instant, or at a designated time in the future, and so the user does not have to be bound by any particular television or radio program scheduling imposed by

Replacement Paragraphs to be Inserted in Page 2:

the broadcaster. Typically the user is provided with a menu or list of available programs or films and can select to view the same, typically having been required to make a payment to the broadcaster. Upon selection, access to the necessary received data and decoding of the same is commenced via the BDR and the selected video and audio is then available to the user for the selected program or film.

As part of the video-on-demand service, which is typically defined as a "single-user service" for the specific user, the user can be presented with the opportunity to request that the MPEG format stream of data for the selected program or film is presented on screen in a fast cue/fast review form in which the picture moves more quickly, similarly to the Play Fast Forward function on a Video Cassette Recorder. This is conventionally achieved via a method whereby the video data server in or connected to the BDR delivers the said MPEG stream of data containing no audio data, and containing some or all of the "I-frames" from the video data (an MPEG video stream will typically contain an I-frame every half second or so).

SUMMARY OF THE INVENTION

Replacement Paragraph to be Inserted into Page 4

In a first aspect of the invention there is provided a method for generating and processing data for the display of a stream of video data on a display screen connected to data processing apparatus, said apparatus processing an MPEG compliant data stream of video data selected to be viewed by a user in a first format via said apparatus and said user provided with means to select to view the said video data in an altered format, said altered format generated by the apparatus and characterized in that, following the user selection of the altered format, the method includes the step of identifying the required level of data to be held in a buffer memory in the apparatus prior to decoding the first frame of video data for the alternative format.

Replacement Paragraph to be Inserted into Page 5

Typically the MPEG format stream of data comprises a number of hierarchical levels, one of which is known as the systems layer and in which layer is included data referred to as time stamp data. This data acts as a reference to allow data in the other levels to be time synchronized and, at intervals, resynchronized by referring to and retrieving a common reference time from the time stamp data.

Header to be Inserted into Page 6

DESCRIPTION OF THE DRAWING

Header to be Inserted into Page 7

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Replacement Paragraph to be Inserted into Page 7

A first step of the method of the present disclosure is that the compressed size of the first I frame encountered once the trick mode data stream is selected following a user selection, is used to set and estimate the buffer memory occupancy requirement to be satisfied before each and every subsequent picture frame decode is initiated to generate the video display. However, to directly determine the amount of data in a single compressed MPEG I frame can still be a fairly intensive operation, so the second part of the method of the application is to use the quantized nature of the timestamp data in the systems layer of the MPEG stream of data to efficiently estimate the size of the first frame, and therefore the required pre-fill threshold over time for the buffer memory.

Replacement Paragraph to be Inserted into Page 10:

Secondly, at the start of the reception of the frames of data in the trick mode stream, reference is made to the systems layer data received by monitoring the PTS's (presentation time stamps) in the packet headers. Because the PTS's are quantized in steps of one frame, then as soon as the PTS is seen to change, it is deduced that the next payload of the data packet refers to the next frame received.

New Paragraph for Page 12 to be Inserted After the Last Line:

While the invention has been described with a certain degree of particularity, it is manifest that many changes may be made in the details of construction and the arrangement of components without departing from the spirit and scope of this disclosure. It is understood that the invention is not limited to the embodiments set forth herein for purposes of exemplification, but is to be limited only by the scope of the attached claim or claims, including the full range of equivalency to which each element thereof is entitled.

Clean Version of the Claims

1. (Amended) A method for generating and processing data for the display of a stream of video data on a display screen connected to data processing apparatus, said method comprising the steps of:

processing a motion picture expert group compliant data stream of video data selected to be viewed by a user in a first format via said apparatus;

generating an altered format for said video data;

a user selecting with selection means to select to view the said video data in an altered format; and

following the user selection of the altered format, identifying the required level of data to be held in a buffer memory in the apparatus prior to decoding a first frame of said video data for the alternative format.

2. (Amended) A method according to claim 1 wherein the determined buffer memory size is used in identifying a value of the separation of the encoded frames in the video data bitstream and this value is used as a substitute for various header field values of the motion picture expert group data stream which may be unavailable.

3. (Amended) A method according to claim 1 wherein the altered format is a fast cue or fast review video display.

4. (Amended) A method according to claim 1 wherein the determination of the required buffer memory size is made for the largest frames of the video data known as the I frames.

5. (Amended) A method according to claim 4 wherein the required buffer

memory data level is set at a value to minimize delay in the transition between the generation of video from the normal and altered video formats such that the level is set at, or substantially at, a level of sufficient size to accommodate the data for the I frame.

6. (Amended) A method according to claim 1 wherein when arriving at the level of the buffer memory data reference is made to time stamp data transmitted as part of the video data.

7. (Amended) A method according to claim 6 wherein said time stamp data is carried as part of the systems layer and allows data in the other levels to be time synchronized by referring to and retrieving a common reference time from said time stamp data.

8. (Amended) A method according to claim 6 including the use of said time stamp data to estimate the size of the I frame data and hence the required video buffer memory data level.

9. (Amended) A method according to claim 1 wherein said video data having been transmitted from a location remote to the apparatus is received by the apparatus.

10. (Amended) A method according to claim 9 wherein said apparatus is a broadcast data receiver connected to receive data from a broadcaster.

11. (Amended) A method of generating a video display in a first standard motion picture expert group format and a second user selectable fast forward or

fast cue format, said method comprising the steps of:

upon user selection of the fast forward or fast cue format, obtaining a value indicative of the separation of received encoded frames in a video data bitstream;

using said value as a replacement value to indicate a required level of data to be held in a buffer memory device prior to the commencement of the decoding; and

displaying of the first frame of data for the fast forward or fast cue display.

12. (New) A method of generating a video display as set forth in claim 11 including the additional step of referring to time stamp data transmitted as part of said video data when arriving at said required level of data.